Big Sky Clearwater

VOL. XI WINTER ISSUE 1981 NO. 3

Conserving Energy

See Articles Inside

Annual Conference Issue

Conserving Energy Helps Budgets

Rick Rosa

Jan Cranor

Water Quality Bureau

Since electrical costs are rising at a rate which is up to five percent greater than inflation and these costs are 20-30 percent or more of the monthly water or wastewater operations cost, now is the time for operators to consider energy conservation measures which could be incorporated into an efficient plant operations program. Knowledge of a few basic electrical concepts, along with some insight into the way electricity use is measured, will help an operator develop a strategy to reduce electrical energy costs.

Various types of electrical motors are utilized throughout water and wastewater plants for the purpose of pumping, aeration, and operation of mechanical drives. Each motor is rated by the power it can deliver, usually expressed as horsepower (HP). The HP term may be converted to the more common electrical power terms of watts or kilowatts (KW). The following expression should be memorized for the quick estimation of power needed to run a piece of equipment:

1 HP = 0.746 KW = 746 Watts

Electrical bills are itemized in kilowatts and kilowatt-hours (KWH), while motors have a horsepower stamped on the nameplate. To obtain an estimation of the amount of electrical power used by a motor, multiply the HP by 0.746 to convert to kilowatts. To obtain the electrical power consumed as calculated by the power company (in KWH), the KW is multiplied by the running time in hours. As an example, a 10-HP motor uses approximately 7.46 KW and if the motor ran for one hour, this would be measured on a power meter as 7.46 KWH. (Remember that the nameplate horsepower is the rated motor capacity but frequently does not reflect the actual horsepower drawn under load.)

The BIG SKY CLEARWATER -- for water and wastewater-treatment operators across Montana -- is published quarterly by the Water Quality Bureau of the State Department of Health and Environmental Sciences in cooperation with the Montana Section American Water Works Association and the Montana Water Pollution Control Association.

Editor: Tim Hunter Graphics: Erich Weber Typist: Jutta Eva Stange
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Mail contributed material to Tim Hunter, Water Quality Bureau, Department of Health & Environmental Sciences, Room A-206, Cogswell Building, Helena, Montana 59620.

Knowing the amount of electrical power used by a particular piece of equipment provides a means of determining the relative power cost for that equipment from a breakdown of the monthly power bill.

A monthly power bill shows the total amount of energy consumed in KWH and also the rate of power consumption or demand. A plant's power usage might be as follows:

1. One 100-HP raw water pump is used 40 hours during a particular month.

2. One 150-HP high service pump is used for 60 hours during the same month.

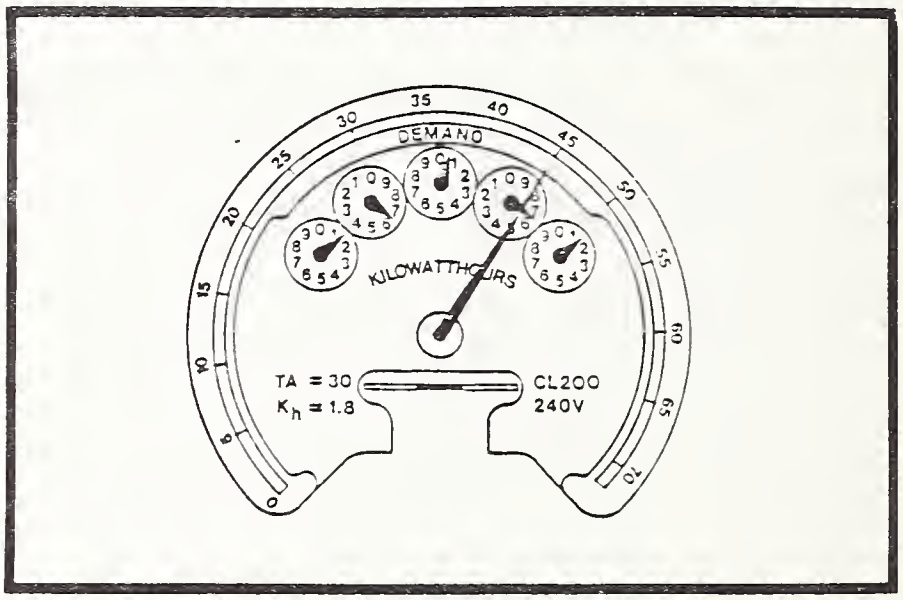
An estimation of the power usage would be:

1. 100-HP = 74.6 KW
   74.6 KW x 40 Hours = 2984 KWH

2. 150-HP = 111.9 KW
   111.9 KW x 60 Hours = 6714 KWH

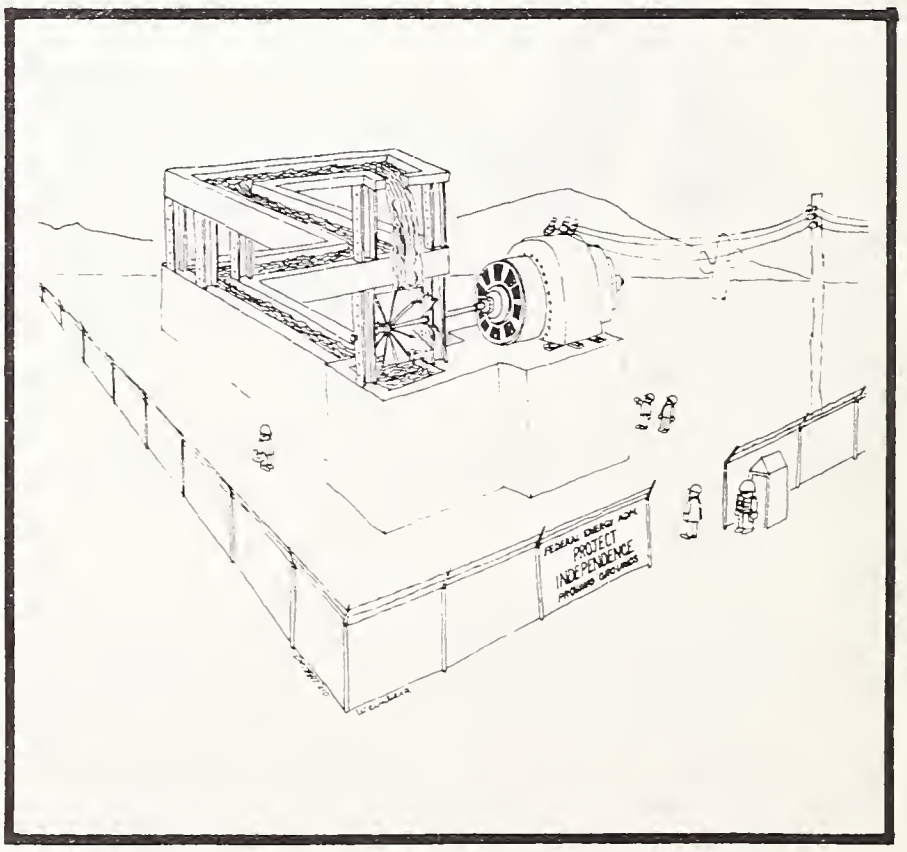
The electrical bill would reflect a charge for 9698 KWH for that month for the two pumps.

In addition to the actual KWH usage charge, most facilities also pay a demand charge. Demand is registered on the power meter at a facility and is used by the power company to determine the needed generation capacity to meet peak electrical power demand. Demand is the greatest KW consumption for the month as measured during a 15-minute interval. In the preceding example, if the two motors were both operated at the same time for at least 15 minutes at any time during the month, then an additional charge would be made for a peak power demand of 186.5 KW (74.6 + 111.9). If these pumps both ran together for a maximum of only five minutes during the month, then the demand charge would be for only one-third of the 15-minute measurement interval, or 62.2 KW. Performing an inventory of the major power users in a facility and understanding the methods of electrical power measurement are the first steps in the development of an energy conservation program; a practical method to reduce operational costs.



Future issues of the BSC will contain articles on ideas for altering plant operation to cut electrical costs and information for determining actual energy usage.

If you have any innovative ideas on energy conservation that have worked at your facility, let us know. We'll print your story and give you state-wide recognition■



Capitol City Hosts Spring Convention

The Montana Section of the American Water Works Association (MSAWWA) and the Montana Water Pollution Control Association (MWPCA) will hold their joint conference on March 25-26, 1982 at the Colonial Inn in Helena. The conference this year focuses on administration, management and engineering of water and wastewater treatment facilities. A Ladies program will coincide with the Thursday and Friday programs.

On Wednesday, March 24, 1982, pre-conference meetings have been set up to coordinate activities and reduce traveling expenses by the Montana Environmental Training Coordinating Organization (METCO) and the MSAWWA/MWPCA Joint Education Committee (JEC). METCO has its first annual meeting (see story on page 11) from 11:00 A.M. to 1:00 P.M. Following the METCO meeting, the JEC is sponsoring a training workshop on the uses, care and repair of backflow prevention devices.

Register early (prior to March 12, 1982) and receive five chances on a drawing for a Montana sapphire pendant and matching earrings. These Missouri River sapphires were dug, cut and set by Dick Montgomery (our Fed. in the Water Quality Bureau). The estimated value of the set is about $250.00. The drawing will be held at the banquet dinner on Friday (March 26, 1982) and the winner must be present to receive the prize. Additional tickets will be on sale for $1.00 throughout the conference.

See you all in Helena in March at the Colonial Inn.

MSAWWA/MWPCA Host City Committee

Wednesday, March 24, 1982

10:00 A.M. - Registration

11:00 A.M. - 1:00 P.M. - METCO First Annual Meeting: Business Meeting Followed by a Luncheon Sponsored by METCO

1:00 A.M. - 5:00 P.M. - JEC - Backflow Prevention Devices

CONFERENCE (MSAWWA/MWPCA)

Thursday, March 25, 1982

Joint Session

8:00 A.M. - Registration (Continued)

9:00 A.M. - Business Meeting (MSAWWA/MWPCA)

10:00 A.M. - Helena Water System - Dick Nisbet

Unique slide show showing historical water supply systems in the Helena area with projected new facilities

11:00 A.M. - Triangle of Success - James M. Troglia

An exciting and dynamic management program to include barriers and gateways to communication along with human resource development growth in leadership and self-reliance

12:00 P.M. - Lunch

Session 1

1:30 P.M. - Aquifer Yield, Well Development and Construction - Tom Davis

2:15 P.M. - Direct Filtration - Elimination of Flocculation and Settling for Low Turbidity Water - A. Amirtharajah

3:00 P.M. - Break

Session 2

1:30 P.M. - An Experimental Approach to the Field Modification of Toxic Metal Criteria - Based on actual bio-assay and stream study data collected from Prickley Pear and Silver Bow Creeks - Theron Miller

2:15 P.M. - Oxidation Ditches - Round-table Discussion

- Operability of the oxidation ditch; an operator's perspective on the Miles City facility - Kathy Miller-Hoard

- Tradeoffs in selection of the Oxidation Ditch Process - John Connell

- Proper criteria for Oxidation Ditch Development - Bill Berk

3:00 P.M. - Break

3:15 P.M. - Quality Circles - A New Concept of Employee Input into Management Decisions - Robert Swinth

4:00 P.M. - The 10-hour, 4-day Week; Will it Work? - Carl Christensen, Dick Montgomery (panel presentation and discussion)

5:00 P.M. - Adjourn

7:00 P.M. - Dinner - Entertainment

Friday, March 26, 1982

Session 1

8:00 A.M. - THM Production and Chlorination - Background information, how THMs are created, discussion on modern methods to reduce or eliminate THMs, update regulations - Joe Sheeler

8:45 A.M. - Water Quality in Montana - Beyond the Sewage Treatment Plant - Loren Bahls

9:30 A.M. - Student Paper - Award winner from state-wide competition of engineering students

10:15 A.M. - Break

Session 2

8:00 A.M. - Ultraviolet Disinfection of Wastewater - New innovations in ultraviolett disinfection technology make it a practical and cost-effective alternative to chlorine disinfection - James Cruver

8:45 A.M. - Economic and Process Considerations for the Rotating Biological Contactor Alternative - John Connell

9:30 A.M. - Aerated Lagoons - Round-table Discussion

- Operation Considerations in Aerated Lagoon Design - Mike Alberi

- Polson Wastewater Treatment Facility - Three-cell Aerated Lagoon System with Final Polishing Pond - Terry Richmond

- Big Timber Wastewater Treatment Facility - Using Aeration to Increase Lagoon Loading - Craig Riley

- New Montana Wastewater Treatment Pond Guidelines - Mark Weston

10:15 A.M. - Break

Joint Session

10:30 A.M. - Training Programs for Engineering Managers - An overview of the in-house training programs at CH_2M-Hill, including time and stress management and listening training - Glen Martin

12:30 P.M. - Lunch

1:30 P.M. - Pump Station Design - An overview of the pump station design seminar held in August, 1981 at Montana State University - Robert Sanks

2:15 P.M. - Everyone is Concerned About Safety, But... Implementing an effective ongoing safety program - Dave Brown

3:00 P.M. - Break

3:15 P.M. - Business Meeting

5:00 P.M. - Adjourn

7:00 P.M. - Banquet - Awards - Dance

MSAWWA

MWPCA

See You in March . . .

REGISTER ON PAGE 13

Water Supplies Provide Energy

Energy has been defined as the capacity to do work. The rate at which electrical energy is used is called power. Operators know that it takes power to supply drinking water. The power used in pumping water is a major cost in water supplies. Have you ever heard of a water system that supplies power? This interesting proposition was the topic of the letter that follows. Kinda makes you think...

ARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

TED SCHWINDEN, GOVERNOR — STATE OF MONTANA — COGSWELL BUILDING, HELENA MONTANA 59620

Water Resources Division
Dept. of Nat. Res. & Cons.
32 So. Ewing
Helena, MT 59601

ATTN: Norman Barnard

To whom it may concern:

We would like to bring to your attention some cities in Montana that have a ready potential for hydro-power production. These cities all have water supplies with a natural elevation sufficiently higher than the city they serve to likely be able to produce cost-beneficial electricity.

The city of Helena stores up to 500 million-gallons (mg) in Chessman reservoir which lies about 1000 feet above Ten Mile Creek. Water released from the reservoir travels through an open channel down to its confluence with Ten Mile Creek near Rimini. The final drop of 300-400 feet occurs over a fairly short distance. Using an average flow of 1.5 mg/day (1042 gpm), a 400 foot head, and 65% efficiency we calculate:

$$\text{Theoretical HP} = \frac{\text{gpm} \times \text{Head}}{3960} = 105$$

$$\text{Actual HP} = .65 \times 105 = 68.3 \text{ horsepower}$$

$$\text{KW} = \frac{\text{HP}}{1.341} = 51 \text{ Kilowatts of power}$$

The flow in this system is presently much higher in some parts of the year than at other times. Consequently some power may be lost unless the power plant is designed for this peak flow or unless the flows are evened out for the entire year. Thus the city of Helena could produce on the order of 500,000 KWH annually which is presently worth about $10,000 but on a 20 year design period could be worth about $25,000 per year. These figures are rough estimates.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

TED SCHWINDEN, GOVERNOR — STATE OF MONTANA — COGSWELL BUILDING, HELENA, MONTANA

You have informed us that a power generation system similar to one that could be installed here has been estimated to cost $103,000. This includes 1600 feet of pipeline to handle 3 cfs of water with 460 feet of head and a 59 KW generation plant. However many factors affect the cost of this system and one for Helena may cost more or less than this amount.

Coincidentally, the city of Helena has plans for a new water treatment plant on the Ten Mile system. The new plant would require about 50 KW of power which could be offset by the above mentioned generation plant about 3 miles upstream.

Butte has two possibilities for power generation. The Basin Creek system has possibly 200 to 250 feet of useable head at 1 to 5 MG/Day flow. Pipes are already installed on this system. The moulton supply consists of a 16 inch line with a 380 foot drop but presently has a pressure break near the middle.

White Sulphur Springs has 300 feet of drop in a pipe that ranges from .35 to 1 MG/Day of flow.

Phillipsburg also has a water supply with good head and with flows up to about 1.2 MG/Day.

There may be other municipalities with hydro-power potential. We can provide you with a list of all public water supplies that use surface water if someone in your department would like to do a survey and possibly promote this idea with municipalities.

Sincerely,

John Jarvie, Ph.D.
Environmental Specialist

JJ/bb

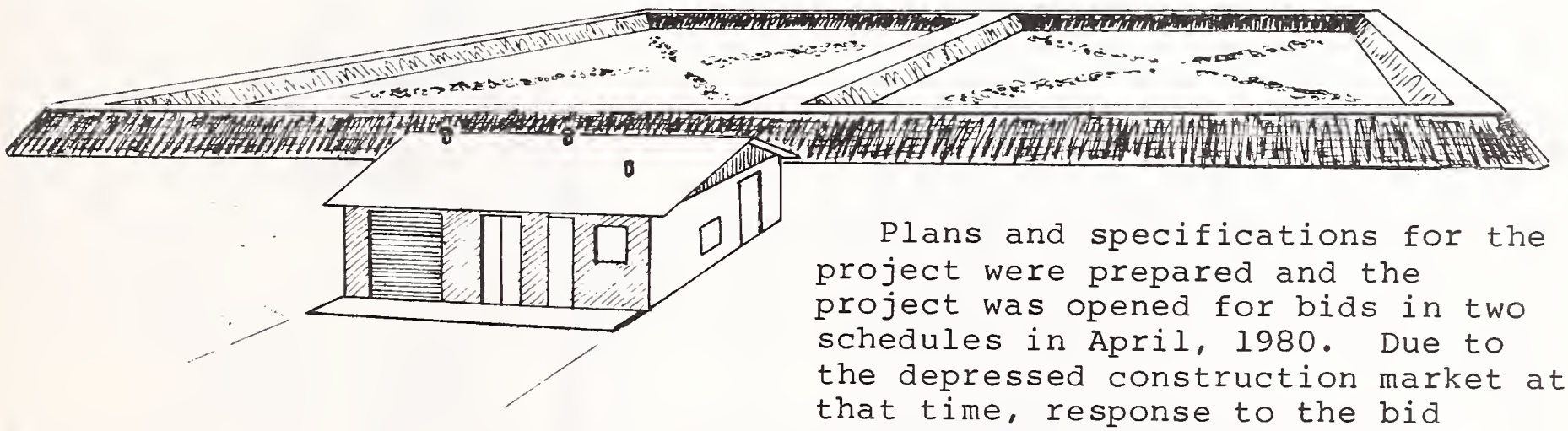
New Plant Completed in Corvallis

By Gary L. Sturm

Morrison-Maierle, Inc., Helena

The people of Corvallis, Montana had to make a decision, either to build a community sewage system or find a new drinking water supply.

Corvallis, an unincorporated community of 450 located in the Bitterroot Valley of western Montana, was faced with surfacing sewage and contaminated drinking water wells due to its dependence on septic tank-drain field systems for sewage disposal. Ordinarily, such systems are adequate to serve communities the size of Corvallis. However, in Corvallis high groundwater and small lot size had resulted in a significant public health hazard. The situation had, in fact, deteriorated to a point where the local Health Department refused to grant any new building permits in the area.



Recognizing these problems, a group of concerned local citizens promoted the formation of a County Sewer District in late 1974 to work towards a solution. Morrison-Maierle, a consulting engineering firm from Helena, was retained to assist the Sewer District. Initially, a grant to fund this project was requested from the Economic Development Administration based on the effects of the building ban on local employment opportunities. Unfortunately, the Corvallis Sewer District could not meet all of the application filing deadlines and was not considered in the December 1976 round of funding.

In 1977, the Montana Water Quality Bureau invited the District to apply for a Step I Facility Planning Grant from the U. S. EPA. In September of that year, the District was awarded $12,000.00 to fund 75 percent of the costs of preparing a Wastewater Facility Plan. After extensive review and revision, the Facility Plan was approved in late 1979. The Facility Plan recommended the construction of a conventional gravity sewer collection system, including a packaged dry pit pump station and an innovative treatment facility utilizing rapid infiltration basins for wastewater disposal. Pre-treatment of the wastewater would be achieved in double aeration basins with a design detention time of 20 days.

Plans and specifications for the project were prepared and the project was opened for bids in two schedules in April, 1980. Due to the depressed construction market at that time, response to the bid advertisement was excellent. Sixteen contractors bid on one or both of the schedules. Schedule I, the Wastewater Collection System, was awarded to Underground Construction of Bozeman, Montana for $259,570.00, which was approximately 35 percent less than the engineer's estimate. Schedule II, the Watewater Treatment Facility, was awarded to R. H. Grover, Inc. of Missoula, Montana for $283,600.00, approximately four percent less than the engineer's estimate.

Construction of the treatment facility commenced in early August. Construction of the wastewater collection system was delayed until mid-October due to high groundwater. Construction on both schedules was completed in June, 1981 with the first connection made to the collection system in July.

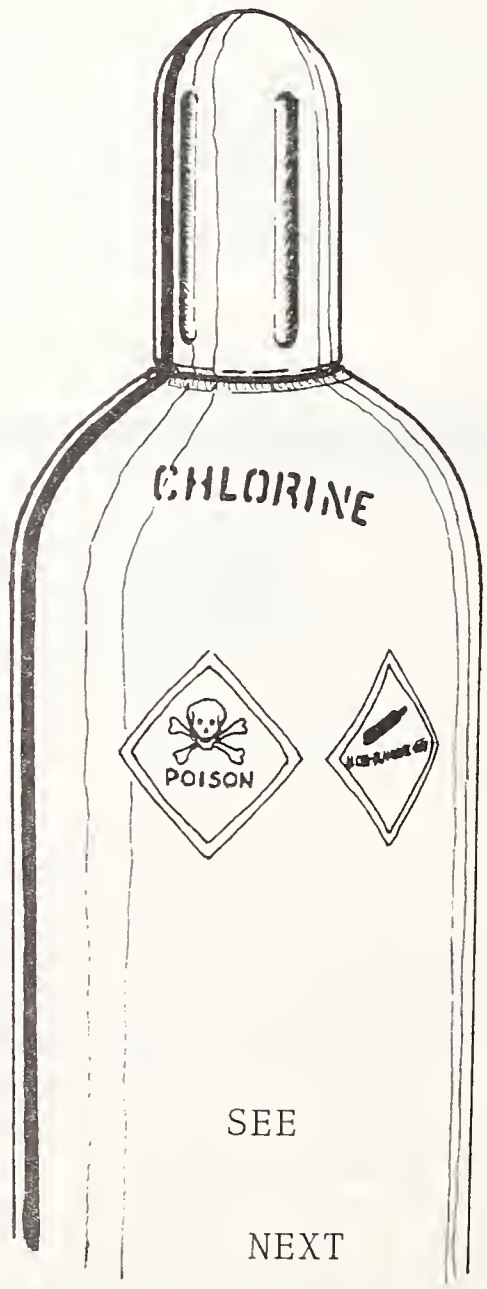
As is normal, several problems were experienced during construction. The most severe problems were those associated with the effect of the high groundwater level on installation of the collection system. Three change orders totalling almost $18,000.00 were required on schedule I to mitigate the groundwater situation and other unforeseen problems. The treatment facility was completed with a single $186.00 change order.

By September, the treatment facility was receiving over 20,000 gallons per day of wastewater (40 percent of design flow) with more than 45 out of 150 existing homes and businesses connected to the collection system. Preliminary observations indicate that the treatment process is working as designed. Aeration and mixing is achieved in each basin using a single venturi jet aerator. These aerators mix pressurized air and recirculated wastewater as they pass through a venturi nozzle. The air and recirculated wastewater are supplied by a 7.5 HP rotary blower and a 7.5 HP non-clog pump. This represents a power requirement of only 0.055 HP per 1,000 cubic feet of basin volume. At the present time, the aeration system is being operated on an intermittent basis totalling less than six hours per day. The treated wastewater is being applied once a day for 20 minutes to two of the four rapid infiltration basins using an automatically controlled dosing valve. Groundwater monitoring to date is not adequate to determine what, if any, effect this water is having on the underlying aquifer.

The total cost of the project including land, legal and engineering (both design and inspection) was approximately $700,000.00. The EPA funded approximately $521,000.00 with the remainder financed by a low interest Farmers Home Administration loan. yearly operation and maintenance costs are estimated at $12,000.00 to $15,000.00 per year. Quarterly service charges have been established at $14.00 per quarter for a single family residence.

All parties involved are to be congratulated for their perseverance in completing this project. Provision of the new wastewater facilities make Corvallis a safer and better place to live■

Chlorinator Basics



SEE NEXT ISSUE...

Operator Convicted in Two Deaths

Reprinted from WPCF's Deeds and Data

A California water reclamation treatment plant superintendent was recently convicted of involuntary manslaughter and violations of the California State Labor Code in the accidental deaths of two of his employees who were overcome by hydrogen sulfide (H_2S) gas in a sewer.

Based on conversations with the prosecuting and defense attorneys in the case, two events of significance apparently preceded the accident. First, employees at the treatment plant recognized a lack of guidance in their operations manual regarding safety procedures for entering sewers and other confined spaces possibly contaminated by H_2S. Second, the treatment plant was cited by the California Occupational Safety and Health Administration (Cal-OSHA) for improper safety equipment (later appealed successfully) and operating conditions.

As a result, employees were reluctant to enter sewers, and at one point, refused to do so. Some employees approached the superintendent about purchasing further safety equipment. It should be pointed out that there was safety equipment at the treatment plant - two MSA cartridge-type breathing apparatus and safety harnesses - although these were not available at the accident site. The plant had no H_2S detectors. The superintendent passed along the equipment request to his superiors, but was told that there was no money available in the budget for the equipment until the following year.

One of the employees was in a blocked sewer attempting to repair a weir when he was overcome the the H_2S gas. Another worker jumped in to save the first, only to be overcome as well. The superintendent subsequently was charged with involuntary manslaughter and violations of the California Labor Code relating to safety procedures for entering enclosed spaces. The prosecution attempted to prove that the superintendent was negligent in protecting his staff and should have been aware of H_2S hazards and proper safety procedures and equipment usage from his experience and membership in certain professional associations. The defense argued that the superintendent was a victim of city bureaucracy, and that he was too understaffed to devote the necessary time to safety training.

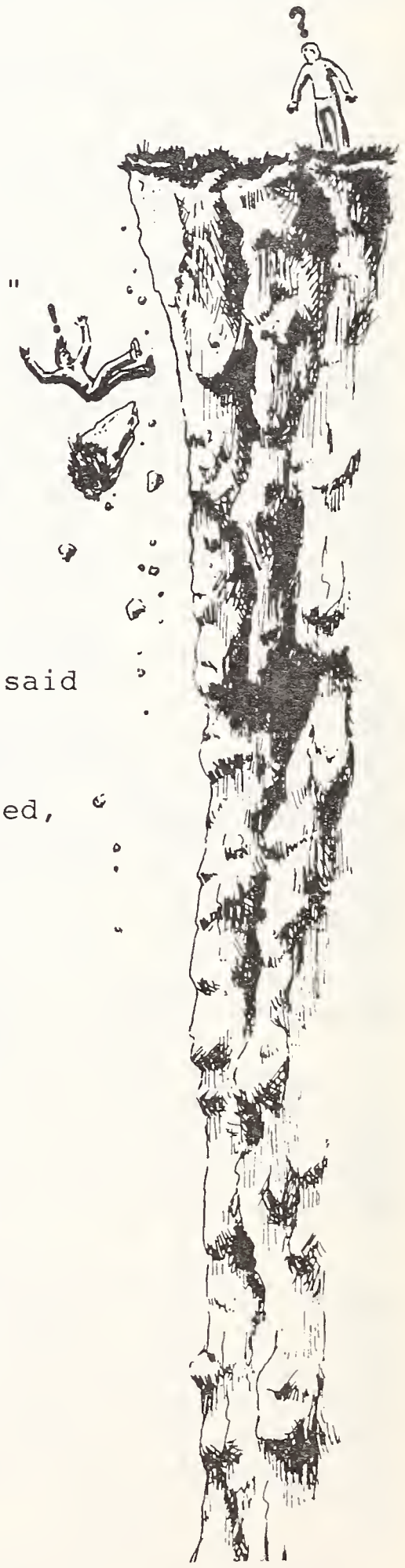
The jury found the defendant guilty of involuntary manslaughter and two violations of the labor code in early July, a year after the accident. Sentencing is scheduled for August and could result in a jail sentence and fines up to $5,000 for each labor code violation. The case is being appealed.

All parties contacted about the case agree on two points - that people in the wastewater treatment profession do not seem to be aware enough of the extreme danger of H_2S, and that the two deaths could have been prevented by adherence to proper safety practices. Treatment plant operators, and particularly those in supervisory and management positions, should be cognizant of one fact - this could happen to you if you do not take steps to protect your staff and yourself from the hazards of H_2S■

Prevention - The Name of the Game

Reprinted from NETA Newsletter

Preventive maintenance. How often the subject is just given lip service in the field and nothing is really ever done. The following poem, submitted by Dr. John Austin, may serve as a useful take-off point for your next session dealing with preventive maintenance.



'Twas a dangerous cliff, as they freely confessed,
Though to walk near its crest was so pleasant;
But over its terrible edge there had slipped
A duke and full many a peasant.
The people said something would have to be done,
But their projects did not at all tally.
Some said, "Put a fence 'round the edge of the cliff;"
Some, "An ambulance down in the valley."

The lament of the crowd was profound and was loud,
As their hearts overflowed with their pity;
But the cry for the ambulance carried the day
As it spread through the neighboring city.
Collection was made, to accumulate aid,
And the dwellers in highway and alley
Gave dollars or cents - not to furnish a fence;
But an ambulance down in the valley.

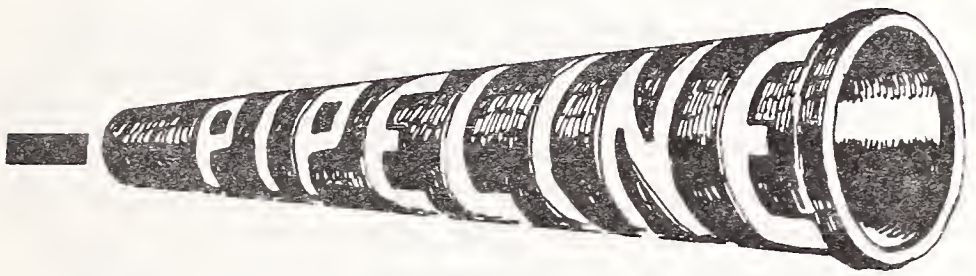
"For the cliff is all right if you're careful," they said
"and if folks ever slip and are dropping,
It isn't the slipping that hurts them so much
As the shock down below - when they're stopping."
So for years (we have heard), as these mishaps occurred,
Quick forth would the rescuers sally
To pick up the victims who fell from the cliff
With the ambulance down in the valley.

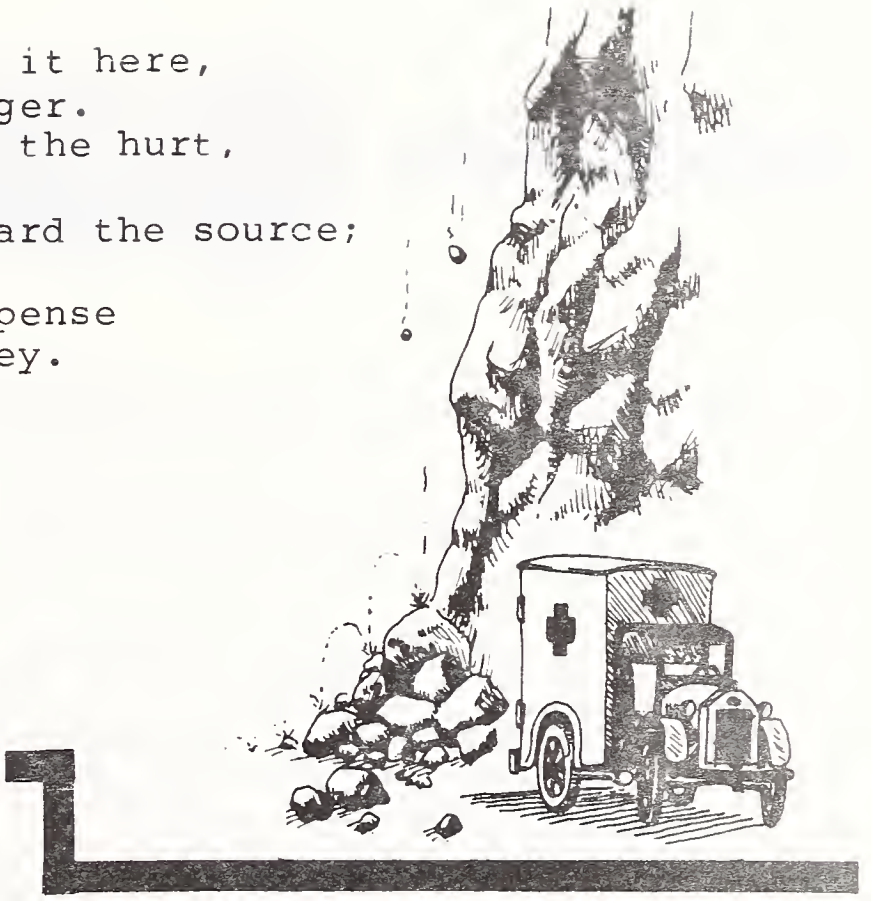
Said one, to his plea, "It's a marvel to me
That you'd give so much greater attention
To repairing results than to curing the cause;
You had much better aim at prevention.
For the mischief, of course, should be stopped
at its source,
Come, neighbors and friends, let us rally.
It is far better sense to rely on a fence
Than an ambulance down in the valley."

"He is wrong in his head," the majority said;
"He would end all our earnest endeavor.
He's a man who would shirk this responsible work,
But we will support it forever.
Aren't we picking up all, just as fast as they fall,
And giving them care liberally?
A superfluous fence is of no consequence,
If the ambulance works in the valley."

Our story looks queer as we've written it here,
   But things oft occur that are stranger.
More humane, we assert, than to succor the hurt,
   Is the plan of removing the danger.
The best possible course, is to safeguard the source;
   Attend to things rationally.
Yes, build up the fence and let us dispense
   With the ambulance down in the valley.

Author Unknown





METCO Incorporates

Montana's fledgling Joint Training Coordinating Committee has incorporated. The group, now called METCO, the Montana Environmental Training Coordinating Organization, filed articles of incorporation with the Secretary of State in November. The certificate of incorporation was awarded November 20, 1981.

The Board of Directors of METCO had their last meeting in August in Helena. At that meeting, Board members established the following goals, which they have been busy trying to meet:

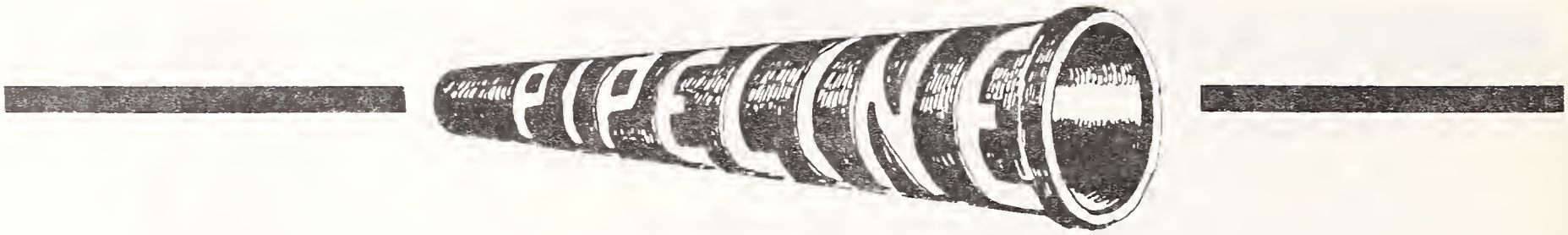
1. Develop and mail calendar of training events.
2. Revise constitution and by-laws and commence legal proceedings to incorporate and obtain tax-exempt status.
3. Expand and revise METCO mailing list.
4. Obtain Post Office Box.
5. Develop METCO informational brochure.
6. Make plans for first annual meeting of METCO.

The first annual meeting of METCO will be held on March 24, 1982 at the Colonial Inn in Helena. It will be a luncheon meeting starting at 11:00 A.M. and ending at 1:00 P.M. Lunch will be provided for those attending at no cost. The meeting will be mostly informational. Questions such as "what is METCO?, what can METCO do for me? and what can I do for METCO?" will be addressed.

Metco was established to coordinate, evaluate, and promote training in environmental concerns in Montana. People from the fields of water and wastewater technology, air quality, solid waste management and pesticide control are involved in METCO. A grant was received from EPA to set up the group.

Anyone involved in training in any of these areas who may wish more information about METCO may contact Tim Hunter, METCO president, at 449-2406 or at this address:

METCO
P. O. Box 1181
Helena, Montana 59624-118



Verle Olsen Receives Hatfield Award

At the Annual Conference of the Water Pollution Control Federation held in Detroit, Verle (Pic) Olsen was approved by the Board of Directors as the Montana recipient of the Hatfield Award for 1981. The Hatfield Award was made this year to about 30 individuals throughout the U. S., Canada and other world countries in recognition of operators of water pollution control plants who are doing an outstanding job in performance of their duties as operators as well as demonstrating distinguished professionalism. The award is given in Montana once every three years.

Pic is the Superintendent of the Kalispell Wastewater Treatment Facility. The treatment facility includes primary treatment followed by secondary treatment utilizing ABF towers with auxiliary aeration. The effluent is polished with multi-media pressure filters before being discharged to Ashley Creek, which ultimately discharges to Flathead Lake. Sludge disposal is via subsurface injection during warm weather and trenching during the winter.

NMC Students Ready in September

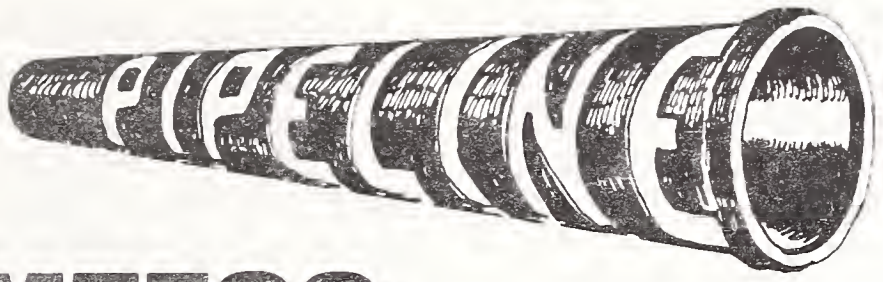
Public awareness of ecological conditions as well as ongoing state and federal legislation governing water quality have created a demand for trained technicians. One Senate report estimates nationally approximately 4,700 technicians will be needed every year for the next several years.

Northern Montana College has seven students presently enrolled in the Water Quality Technology Program who will be available for employment on or about December 18, 1981.

The Water-Wastewater Technology Curriculum at Northern Montana College has provided these students with a broad base in science, mathematics, and general education courses while incorporating the specific tools needed in the industry such as basic electricity, hydraulics, maintenance, operation, public relations, and water and wastewater treatment processes. Students have been provided with an internship training period augmenting the classroom learning where they were able to apply classroom learning to on-the-job situations.

The students will be qualified to take the Montana State Certifaction Exam upon completion of the program. Come talk to potential employees with a demonstrated interest in "Hire Education."

For further information or to set up employment interviews with these students contact Toby Helmbrecht in the Placement Office at Northern Montana College, Havre, MT 59501 or call (406) 265-7821, extension 3263.



JEC vs. METCO

There has been considerable confusion regarding two new educational groups in Montana. The Joint Education Committee, which is a joint committee of MSAWWA and MWPCA, and METCO, the Montana Environmental Training Coordinating Organization.

The Joint Education Committee, JEC, is directly involved in providing training opportunities for water and wastewater personnel in Montana. They have sponsored several series of training seminars. The last one covered valves, fire hydrants, trenching and backfilling. They have also received a grant from EPA to provide training to water and wastewater personnel on Montana's Indian Reservations. This training is being conducted by Ken Johnston.

The Montana Environmental Training Coordinating Organization, METCO, is involved in coordinating, evaluating and promoting training in several environmental fields including but not limited to water and wastewater. METCO will produce a quarterly calendar of training events and provide other services to its members. METCO was called the Montana Joint Training Coordinating Committee, MJTCC, during its infancy. The name METCO was adopted because of confusion with the MSAWWA-MWPCA group■

★★★Register Here !!!★★★★

REGISTRATION FORM

1982 ANNUAL MSAWWA/MWPCA CONFERENCE
March 25 and 26, 1982
COLONIAL INN
HELENA, MONTANA

ENCLOSED FEE:

General Registration (incl. Conference & JEC Workshop)	$55.00	_____
Ladies Registration (Conference only)	$20.00	_____
JEC Workshop MSAWWA/MWPCA Member	$ 7.50	_____
Non-Member	$10.00	_____
TOTAL AMOUNT ENCLOSED		$_____

Name_____ Title_____

Utility, City, County_____

Address_____

City_____ State_____ Zip_____

Member: ____ AWWA ____ WPCF ____ Non-Member

Those registering prior to March 12, 1982 will receive five chances for the sapphire jewelry drawing during the banquet March 26, 1982.

MAIL TO:

Host City Committee MSAWWA/MWPCA
Dept. of Health & Env. Sciences
Cogswell Building, Room A-206
Helena, Montana 59620

Please make checks, warrants, or purchase orders payable to:

Host City Committee - MSAWWA/MWPCA

I plan to attend:

____ METCO Meeting

____ Backflow Prevention Training Session

____ MSAWWA/MWPCA Conference

Energy Conservation Seminar

An energy conservation seminar for water and wastewater operators was held in Helena October 14th. The seminar was attended by operators, plant managers, public works directors, consultants and energy planners. Kerwin Rakness and Boyd Hanzon of M & I, Inc. Consulting Engineers presented the one-day program. The seminar included information about energy measurement and billing, determining optimum energy usage, effective use of energy in pumping and aeration, establishing a conservation plan and budgeting for energy expenses. A comprehensive and valuable manual was given to the seminar participants to help in the implementation of an energy conservation program. A copy of the manual can be obtained from M & I, Inc. for the cost of reproduction ($10.00). If you are interested in a manual, contact:

Kerwin Rakness
M & I, Inc. Consulting Engineers
4710 South College Avenue
Fort Collins, Colorado 80525
(303) 226-2323

Design Workshops

Five 3-day workshops sponsored by Montana State University and by ASCE, AWWA, ASEE and IEEE are to be held in Chicago (April 19-21), Dallas (May 3-5), New York (June 2-4), Edmonton (May 24-26), and San Francisco (July 26-28).

The textbook for the workshops will be the 1,450-page Proceedings of the Conference on Pumping Station Design held August 31 - September 2, 1981 prepared by nearly 90 distinguished experts. It will be augmented by other study and resource materials. Teaching personnel will be selected from authors of the Proceedings. Dr. George Tchobanoglous, author and editor of Metcalf and Eddy's "Wastewater Engineering; Collection and Pumping of Wastewater", will assist at some workshops. The workshops will feature problem-solving sessions under the direction of some of the most experienced and distinguished consultants in the country. Both beginners and experienced designers will benefit.

What's the Reading ? ? ?

Probably the most important factor in determining the power usage at your plant is proper power meter readings. Try this example and see how well you've done below.

A _____

B _____

LINE B _____
LINE A _____
KWH USED _____

ANSWERS

Line A 11429
Line B 14971
KWH used 3542

First day: Fundamentals. Pumps, constant and variable speed drives, piping systems, station curves, pumping calculations, hydraulics, transients, and general considerations in selecting equipment.

Second day: Water Pumping. Raw water intakes and wet wells, pumping station layouts, well pumping, finished water pumping, booster stations, and structural considerations.

Third day: Wastewater Systems. Influent structures including screening, grinding, and wet well design, pumping station layout, prefabricated stations, submersible pumps, sludge pumping, auxiliary systems, codes, specifictions, blunders, and quality control.

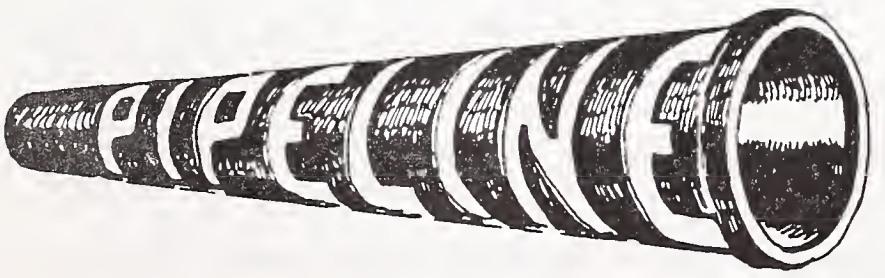
The workshop fee is $475.00. Register at least six weeks before the workshop. The three-volume Proceedings will be sent upon payment of a portion of this fee ($125.00). Allow four weeks for delivery or add $10.00 for special handling and priority mail. Write Pumping Station Workshops, Department of Civil Engineering and Engineering Mechanics, Montana State University, Bozeman, Montana 59717 or telephone (406) 994-2111■

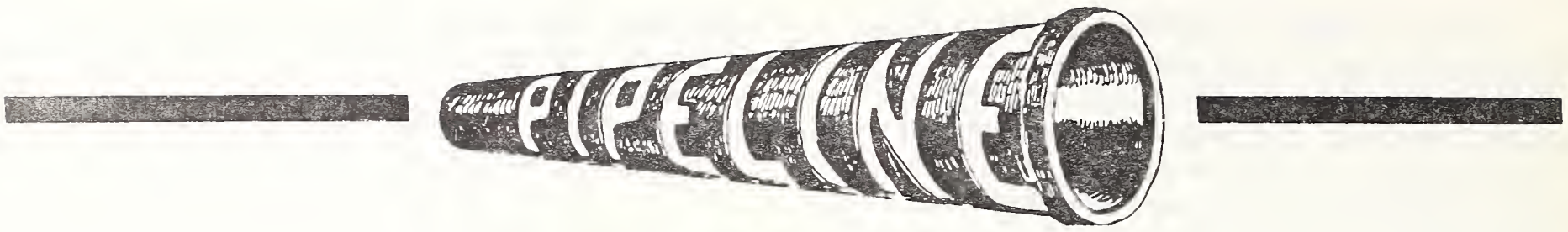
55 Pass Latest Certification Exams

Carl Lauterjung, Chairman, Whitefish, and D. G. Willems, Helena, Director, Montana Board of Certification for Water and Wastewater Operators, announce the certification of 55 persons as water and wastewater plant operators. Those passing certification examinations given on September 18, 1981 in Bozeman are:

Class 1

Michael Alberi, 1BC, Billings
Donald T. Anderson, 1ABC, Colstrip
Dana L. Audet, 1AB, Great Falls
William T. Barger, 1ABC, Missoula
John Bleth, 1B, Colstrip
Steven A. Brewster, 1AB, Billings
Danny D. Burns, 1C, Libby
Robert L. Butcher, 1BC, Billings
Steven J. Carlson, 1AB, Whitefish
Carl Christensen, 1C, Billings
Danny Corti, 1ABC, Missoula
Dana Cowger, 1ABC, Billings
James C. DeVerniero, 1B, Billings
Susan T. Garvin, 1AB, Helena
Gregory J. Hochmuht, 1AB, Browning
Dennis Hogan, 1C, Billings
Robert Hollar, 1C, Great Falls
Geoffrey S. Hughes, 1ABC, Kalispell
James E. Kuntz, 1C, Great Falls
James C. McGrane, 1AB, Helena
Burton McMonigle, 1AB, Anaconda
Jack Miller, 1C, Butte
Harley M. Mott, 1AB, Fort Peck
Susan J. Niehoff, 1C & 4 wells, Glendive
Thomas P. Nulty, 1B, Gt. Falls
Stevan Papich, 1AB, Havre
Vernon Peck, 1C, Great Falls
Gary Root, 1AB, Kalispell
Robert Salle, 1AB, Anaconda
J. C. Schofield, 1ABC, Helena
Cathy A. Skilbred, 1C, Bozeman
Mark Stevens, 1ABC, Forsyth
Cheryl L. Taylor, 1AB, Bozeman
Mike Thomas, 1A, Billings
Clint F. Tinsley, 1AB, Kalispell
Clara Fay Vannice, 1C, Plains





Class 2:

Darrell W. Aitken, 2AB, Chester
Merlin Ballensky, 2C, Col. Falls
Kim N. Bunton, 2AB, Kremlin
James A. Hays, 2AB, Libby
Haward L. Massingill, 2C, Great Falls
Michael J. Richards, 2AB, Lewistown
Kenneth A. Shelhamer, 2C/3A, Harlem
Wendell Wade, 2C, Lewistown

Class 3:

Louis E. Brown, 3C, Whitefish
Russell D. Copenhaver, 3C/4 wells, Hinsdale
Melvin J. Hoff, 3C, Libby
Patrick McGowan, 3 wells, Boulder
James P. Sheehan, 3 wells/lagoon, Whitefish
Donald M. Slabaugh, 3 wells/lagoon, Whitefish
Terry J. Volk, 3AB, Sheridan, Wyoming
Dennis A. Wolff, 3A, Miles City

Class 4:

Warren Bird, 4 lagoon, Wibaux
Dan Diridoni, 4 wells/lagoon, Darby
John M. Prosek, 4 wells/lagoon, Lakeside

In order to receive certification, a person must pass an examination indicating proficiency in certain aspects of chemistry, bacteriology, and hydraulics. This knowledge is necessary to protect the safety of the public and private water supplies and to protect the state waters from pollution. Currently, there are approximately 1,100 certified water and wastewater treatment plant operators in Montana.

The next examinations are scheduled for March 20, 1982, in Butte, Havre, Miles City, and Missoula. Anyone wishing to take an examination must submit an application before March 5, 1982, to the Montana Board of Certification for Water and Wastewater Operators, Department of Health and Environmental Sciences, Room A-206, Cogswell Building, Helena, Montana 59620■

ANSWERS

1.) b.
2.) d.
3.) a.
4.) 2919 lbs/week
5.) 8.5 fps
6.) 856,458 gal./day or .86 MGD

Operators Certification Corner

1. A heavy growth of algae in a surface water reservoir will have which of the following effects on the water during the nighttime hours?

   a.) raise the pH

   b.) lower the pH

   c.) no effect on the pH

2. A cylindrical tank 10 ft. in diameter and 20 ft. high is full at 8:00 A.M. At 12:00 noon the water depth is 12 ft. What was the water use in gallons per minute during this 4-hour period?

   a.) 880 GPM

   b.) 110 GPM

   c.) 15 GPM

   d.) 20 GPM

3. The carrying capacity of water mains is often reduced by

   a.) tuberculation

   b.) looping

   c.) vacuum breakers

   d.) lining

4. A plant effluent flowing at a rate of 2 MGD contains 25 mg/l of TSS. How many pounds of solids will be discharged per week?

5. If 3,000 gallons per minute of water are discharged through a 12-inch pipe, find the flow velocity.

6. A sewage treatment plant uses 50 pounds of chlorine per day at a treatment dose of 7 ppm. How many gallons per day does this treat?

Some useful formulas:

$$lbs = ppm \times MG \times 8.34$$

$$Q = AV$$

Area of a circle = πr^2

Water Quality Bureau
Department of Health
& Environmental Sciences
Room A206, Cogswell Bldg.
Helena, MT 59620

6154

TO:

1,750 copies of this publication were published at an estimated cost of $.33 per copy, for a total cost of $576.10, which includes $434.50 for printing and $141.60 for distribution.